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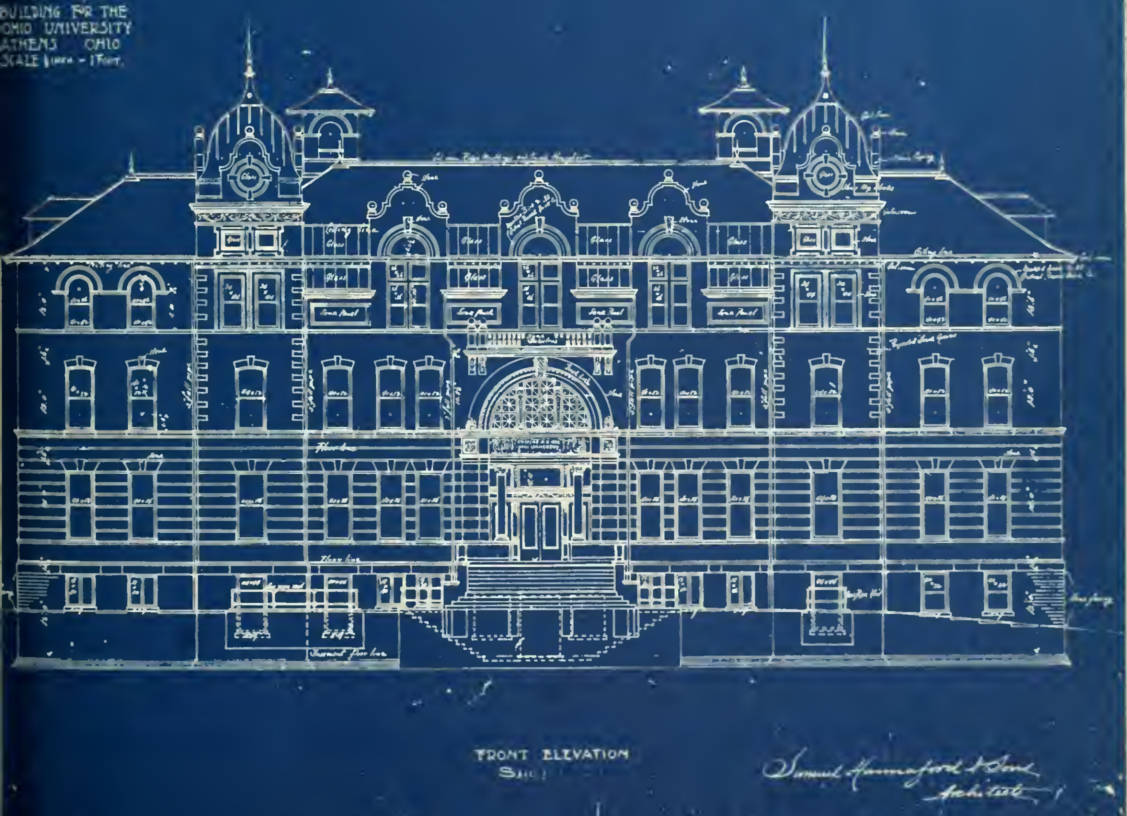
NOVEMBER, 1974

The Ohio University

ALUMNUS MAGAZINE



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PHOTOGRAPHS BY DON F. STOUT EXCEPT WHERE INDICATED

EWING HALL,

1896-1974

by Michael B. Harper

After a decade of threatened existence, Ewing Hall has been razed. Serious talk of demolition began ten years ago, when Ewing was to be replaced by a new library building; but Alden Library was constructed on a more central location. Ewing remained, a dowdy, old relic decaying from the inside out.

It was not always so. At one time Ewing was called "capacious, beautiful, ample" and "the handsomest and most serviceable building on campus". Stung by criticisms of extravagance, the Building Committee opined in June, 1898, that "Time will justify the action of the Board" and that Ewing would "always be the chief building of the college". The construction of Ewing was undoubtedly an act of considerable foresight or extraordinary optimism for an institution of 25 faculty members and 220 college students.

The need for a new building was expressed by President Charles W. Super in his biennial report of 1895:

"There are not sufficient classrooms for the different teachers and two or more of them are generally compelled to hear recitations in the same room, which causes no little inconvenience and annoyance. The quarters occupied by the old art department are entirely inadequate. This is a serious drawback in view of the increased attention drawing is at present demanding and receiving in all instituitons that claim to offer a complete education. Besides, our experience has already demonstrated that our musical department can be made to yield a surplus of receipts over expenses if we can find practice rooms. Upon this sole condition depends our expansion in this direction. Our library, too, is crowded to the utmost, and yet, to stop the purchase of books is to seriously cripple one of the most important educational agencies of this or any other university. A new building that can be erected for about $25,000 will supply a need that is daily becoming more pressing, and we hope that the General Assembly will see their way clear to furnish us means of providing it."

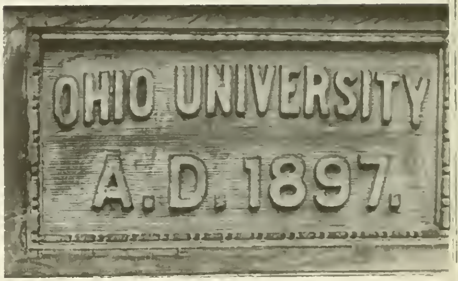
The Ohio State Legislature in March, 1896, passed an act authorizing the trustees of Ohio University to issue certificates of indebtedness not to exceed $60,000 for the new building and other improvements. In June of the same year Samuel Hannaford (1835-1910), a Cincinnati architect, presented plans to the trustees. Hannaford's work was well-known to the University. In 1881 President William Henry Scott had hired him to design the chapel or Assembly Hall and in 1894 Hannaford had won the competition for the design of the University of Cincinnati. The trustees approved the plans, set a limit of $45,000 for the construction and chose a site for the building. The site chosen was that occupied by Hannaford's earlier chapel. The trustees even agreed to allow the old West Wing (McGuffey Hall) to be demolished if necessary for the building of the new hall, but fortunately this act of cannibalism was not needed. An Athens builder, Henry O'Bleness, was chosen as contractor and Major Charles Welch, also of Athens, was appointed to supervise the project.

In the fall of 1896 Henry Sheeler Company of Chicago moved the chapel 100 feet south and 200 feet east (within the present site of Alden Library). The work took 40 days and cost $6,254.20. By December 1 the chapel was ready to be used. A few years later the University's library of 15,000 volumes was removed from the attic of Cutler Hall into the Old Chapel, as it became known, and the literary societies occupied the second floor.

In November, 1896, contracts were let for the new building; and by the last day of the month excavation had begun on the site. Work went slowly and seemed to go even slower as time passed. In 1897 notices were posted to keep students and townsfolk away from the workmen, who were spending too much time in idle chatter with onlookers. Nevertheless, by February, 1898, the campus paper was able to effuse: "Who would have believed, three years ago, that we should live to see such a grand building erected on the old college grounds? What a contrast to the little, modest, two-story brick academy, the first college building erected early in the century." On March 29, 1898, the building was officially opened.

The building is in the eclectic style so popular at the turn of the 19th Century. Walter C. Kidney in his recent book on the subject (*The Architecture of Choice, Eclecticism in America 1880-1930*, George Braziller, New York, 1974) has described the art of the eclectic as "an affair of taking up forms of proven and mature beauty from the formal and vernacular architecture of the past and adapting them, learnedly but with personal touches, to modern building programs". Unlike the earlier revivalists, classical or Gothic, the eclectic was no purist when it came to the use of forms. He would combine elements from diverse periods and styles, introducing original motifs and elements as he saw the need, depending on his own sense of fitness to bring harmony from potential chaos.

On the whole Samuel Hannaford was quite successful in his marshalling of elements in Ewing Hall. On the exterior, renaissance rustication was used in the manner of the Palazzo dei Medici in Florence, Italy. However, yellow fire-brick manufactured near Portsmouth, Ohio, was substituted for the stone masonry of the 15th Century model. The fenestration


Ewing Hall cornerstone

varies from the large Venetian windows of the auditorium to the Roman window over the building entrance. There are Flemish dormers, Tuscan and French towers and Greco-Roman mouldings. Ewing Hall may be a bit bumptious in comparison with the self-effacing simplicity of the old buildings, but it embodied the ideals of a new time, the Gilded Age.

Hannaford's plan, closely resembling his earlier design for the University of Cincinnati, shows the architect to have been an efficient organizer of space. In the basement were assembly rooms, offices, a locker room and a stores room with a large vault. Beneath the auditorium was a gymnasium which the *1898-99 University Catalogue* states "has already been provided with considerable apparatus for physical exercise and the supply will be increased from time to time as needed. Regular instruction in light gymnastics is given by Professor Milliman (ed. note: Loren D. Milliman, AB, *ad interim* professor of rhetoric and English literature). Every student has thus an opportunity to train his body as well as his mind." There was some concern expressed in the campus paper of March 26, 1897, that what the students had learned in class might be knocked out of their heads in the gym if they ran into one of the six large pillars which supported the floor of the auditorium above.

Beneath the auditorium stage was a forge and lathe room for the students in electrical engineering. Below that was a boiler room. Unlike the earlier buildings with simple room heaters, Ewing had a moden central-heating system, which cost the University $4,355. Also located in the boiler room was the electric generator, which furnished the power to light the whole campus, and about which the Electrical Engineering Department was created. Machines being what they were, Ewing Hall was also equipped with gas lighting.

The basement contained the classrooms, a laboratory and photometry for the electrical engineers. "The rapid development of electricity for the purposes of light and power, and its general introduction into all sections of the country, have created a demand for men well-qualified in this branch of engineering." The University catalog continues: "The college does not lose sight of the fact that mind training is its chief business. Yet it is the guiding principle of this department that the education of the mind is none the less efficient for making use of the tools for this purpose which may at the same time be applied by the trained mind to earning a livelihood." The conflict between advocates of vocational education and those of liberal education which we sense in this passage is with us still after three-quarters of a century.

On the first floor of Ewing Hall were the president's study and adjoining classroom. The presidents then were not exclusively administrators. President Super, for example, "directed the faculty and employed faculty members; he was a leading member of the executive committee; he interviewed prospective students; he supervised the buildings and grounds; he lobbied in Columbus; he conducted with Dr. Gordy the *Journal of Pedagogy,* and he delivered numerous lectures during the year, especially at the Farmer's Institutes." In addition, he continued his duties as professor of Greek and philosophy, which required three or four hours each day. The classics, Greek and Latin, were the very heart of the college curriculum of the time. "The Greek language embodies the experience of the most remarkable people of antiquity—a people whose achievements in literature, in the arts, and in government have been, and doubtless will continue to be, inexhaustible sources of profitable instruction." Dr. Super continues his description of the Greek curriculum in the *University Catalogue of 1898-99:* "It is here claimed that a study of the Greek language, together with all that should properly be taken in connection therewith, will contribute the most important element of a liberal education."

Sharing Ewing's first floor with the president's rooms were the administrative offices, the offices of the Board of Trustees and that of Professor Atkinson of the Physics and Electricity Department. Adjoining Professor Atkinson's study were the physics classroom and laboratory.

The auditorium or chapel room, with a balcony, large stage and dressing room, was entered directly from the tiled foyer on the main floor. The campus paper for January 22, 1898, praised the auditorium as "a most beautifully decorated interior" containing woodwork "all finished with non-pareil hand-carving" and walls "artistically tinted". Both the auditorium and stage were lighted by great windows of stained and painted glass manufactured by William Colter and Sons of Cincinnati and the Riordan Company of Covington, Kentucky. The side windows featured willowy and earnest young ladies personifying Art, Education, History and Science. A special Saturday session of the Building Committee was called on July 29, 1897, to decide on the design of these and the other windows. Especially important was the decision about the historic figures to embellish the three windows of the stage. It was decided that William Shakespeare, the "king of writers", should occupy the central window, flanked by

Manassah Cutler, founder of the University, and Thomas Ewing, the institution's first graduate. In the ceiling was a skylight bearing the image of the Great Seal of the State of Ohio.

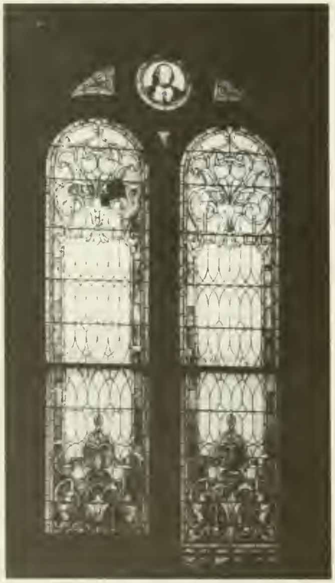
Estimates of the seating capacity of the auditorium varied from source to source: The 1898 campus paper says 750, while the catalog of the same year gives 900; later sources say 1,200. In any case, it was a very large hall for an institution with a combined enrollment of the preparatory school and the college of 434 students in 1898. It was used for commencements, entertainments and oratorical contests.

Here, too, Professor Catharine A. Findley taught elocution and oratory, using the Francois Delsarte method. "Believing that the voice is simply a medium for the soul's emotions, we develop it to its greatest extent of power, flexibility and beauty, that it may more powerfully set forth these emotions. . . . But we do not stop here. There is a language more eloquent than words—the language of the eye, the hand, the plastic form. Nor can these be separated from the voice. When we are stirred to speak, the face lights up, the chest expands, the whole body becomes infused with new life, and speaks a language more eloquent than words." Therefore the curriculum included physical culture and "aesthetic gymnastics" as well as the usual courses in public speaking. Oratory was a more important element of the total education in an age when recitation was the chief didactic method.

Ewing Hall's second floor included spacious, high-ceilinged teachers' rooms and a drafting room, as well as the balcony of the auditorium. The third floor had fraternity rooms and a committee room.

Also on the third floor was a music room with a platform, that served both as a classroom and as a recital hall. Here Miss Lula C. King and Miss Nellie H. van Vorhes taught vocal and instrumental music, which included Chorus and Sight Reading, Voice Culture, and Piano and Theory. There were small practice rooms where the students progressed from "Doerner's Technical Exercises, Grade 1" through Mozart's and Beethoven's concertos. Across the hall from these stuffy, noisy rooms were the life-class and art studios. Here Miss Sarah Stinson guided her students to "a

PHOTOGRAPH BY HARRY SNAVELY



Center window of the three at the rear of the stage, showing William Shakespeare in the roundel.

practical knowledge of art" and "through the cultivation of their observing powers, to an appreciation and love of the beautiful as found in nature and expressed in the handiwork of man". Progressing from charcoal to pen and ink, from outlines of geometric shapes to shaded drawings of plaster casts, the student worked his way up to the day when he could actually paint from nature and the living model. The studios were large and well-lighted by skylights set between the dormer windows on the north front of the building.

PHOTOGRAPH BY HARRY SNAVELY

The final cost of the Ewing Hall construction was $56,656.54, plus $2,273.62 in architect's fees and $2,519.99 for furnishings. The resulting figure of $61,450.15 far exceeded then President Super's estimate of $25,000 in 1895 and was considerably more than the trustees' limit of $45,000 set in 1896. As early as 1897, Super's successor as president, Isaac Crook had warned that "when completed it will still need to be furnished and equipped, and as all building eras test the wisdom and the resources of any institution, the completion will call for careful management in order not to touch upon current expenses necessary to do the educational work for which alone the institution exists". The Building Committee defended itself on June 20, 1898, saying that "while it may be questioned whether the Board was warranted in erecting as large a building as has been erected in view of the cost of moving the old chapel building, and other necessary expenditures, yet your commission believes that Time will justify the action of the Board in this regard. It will always be the chief building of the college, containing its assembly room and auditorium". But charges of graft were made against Major Charles Welch, the supervisor. A committee was set up in 1899 by the trustees, and found Welch innocent of all misdealing or graft. President Super, who returned to office after President Crook resigned in 1898, could not resist implicating Dr. Crook in the financial difficulties which followed the construction of Ewing Hall. This implication seemed to be based more on personal differences than any real guilt. After all, the work had been set in motion by President Super, himself, before his resignation in 1896. In any case, the presidents' reports for many years were to contain complaints of the expense of paying off the indebtedness incurred in the building of Ewing Hall.

Although I have referred to the new building as Ewing Hall throughout this article, the building was without a name for some time after its opening. At various times, and occasionally simultaneously, it was known as the New Building, the Administration Building, the New Chapel and Lux Hall, the last coming from the motto "Fiat Lux" (Let there be light) inscribed above the entrance. President Super had suggested that it be named Garfield Hall after the President of the United States who, while in the Ohio Legislature, had been a friend of the University. But the final decision was that it should be named for Thomas Ewing, one of the first two graduates of the University. (The other graduate, William Hunter, died a year after he graduated, which is why Ewing is often referred to as the first.)

Ewing fits the 19th Century paradigm of success, rising from modest means to a position of wealth and influence. He attended Ohio University sporadically while working in a salt works to pay his way through school and to help get his father's farm out of debt. Eventually, he became known as the best legal man in the West, and Ewing is said to have held his own in debates with such oratorical masters as Webster and Calhoun.

Ewing served twice as U.S. Senator from Ohio and went on to serve as Secretary of the Treasury under William Henry Harrison. He was the first Secretary of the Interior when the position was created by Zachary Taylor. Later he served as presidential adviser to Abraham Lincoln and was retained in that capacity by Andrew Johnson upon the latter's succession to the presidency.

Last renovated in 1949, Ewing Hall is now badly in need of up-dating, but present-day estimates run in the neighborhood of four million dollars. Even then, it would be difficult to adapt the building to modern requirements and allow for easy access for the handicapped. Therefore, this jaded jewel of a bygone age will have to go. Long-range plans are for an amphitheater to be built on the site. This, according to Alan Geiger, University planner, would provide some environmental relief and create a better human scale for the students. It would open the College Green a bit on the heavily built-up west side.

Some of the Ewing Hall foundation stone will be used in the construction of the amphitheater, but plans are indefinite as to the fate of the stained glass windows. Whether they will be sold at auction, be all or partially preserved in the Trisolini Gallery on campus or be destroyed remains to be seen.

But whatever befalls the windows, when the building comes down, so will the curtain on an era of glory at Ohio University.

Dr. Michael B. Harper, assistant professor of art, teaches art and architectural history at Ohio University. This combination of subjects prompted his wish to set down the story of Ewing Hall, before the building was gone forever.

Harper, in the course of his professional preparation, took his PhD at the University of North Carolina at Chapel Hill, with supplementary work at the Institute of Historical Research at the University of London. His postgraduate efforts as curator of prints and drawings at museums in North Carolina and in New York led to his private collection of prints.

Another active interest of Harper's since he came to Ohio is in the many folk festivals held throughout the state. He has attended more of them than the average native of Ohio, but has yet to make it to his ultimate goal — the Hinckley Buzzard Festival.

The Unique Award

Many universities around the country have found ways to honor good teaching, but none have chosen the method used by Ohio University. The University Professor Program is unique in that it only begins with the granting of the award. A challenge as well as an honorarium is conferred on those who are selected, for they are partially liberated from their normal teaching routine and enabled usually to substitute one course of their own choosing for one in their regular load each quarter.

It is assumed that many teachers have interests within and without their specific fields and that they have the basic discipline and training to fulfill that curiosity. Regular teaching duties don't ordinarily allow them to pursue these interests, at least not to the degree they would wish. The UP program allows students to select professors who have challenged them the most to further open new pathways in the learning experience. In the words of Dr. Edgar Whan (professor of English) who conceived and helped found the program, "Teaching has to be a learning experience if it is to help concerned students shape who they become."

Though some critics of the award view it as a popularity contest, Dr. Whan doesn't consider the purpose as a reward for good teaching; rather, "It is to enable motivated students to have a say in curriculum by giving those professors they feel most capable the chance to vary their course material." He feels that the basis of a university lies in its respect for students. "I am responsible *to* my students, not *for* them. We must have a community relationship, where we're bound together in trust, respect and a common love of learning. In the Old Testament, learning is described as a love affair."

The UP program was initiated in 1970. In the fall quarter, the first professors participating were selected by a poll of graduating seniors, to teach courses of their own choosing during the successive winter and spring quarters.

Richard M. Doolen (associate professor of history), one of the first participants, recalls that lack of structure was a problem for some in the early days of the program. His course during the winter quarter, in which he supervised nine projects in late 19th Century studies (his specialty) was successful. Students participated from different fields, and studied the arts, drama, music or special problems of the period. The group also took field trips to Nelsonville, visiting an elderly priest who could recall the era. But in the spring quarter, Doolen tried a team-teaching experiment with Whan in which only ten out of 30 students completed the reading list.

More recently, UP courses have been structured to the point where, upon occasion, undergraduate students find themselves doing professional-level research. Such was the case with a UP course supervised by Dr. Elliot Entin (associate professor of psychology) during the 1972-73 school year.

Entin organized six research teams to study aspects of human motivation. He planned to teach them what they needed to know of motivation, experimental design and statistics while they worked. Students signed up for 15 hours each, for projects which they expected could not be finished that quarter. Many took five additional hours during the spring and some continued working without credit through the summer and into the fall.

Of the six teams, four finished their projects and three presented their papers at psychological conventions. The projects included a study of future orientation and achievement motivation, which were found to be factors in a person's success (if a student high in achievement motivation believes a course will have value in the future, he will have higher achievement the reverse is true for low achievement students); a study of programmed instruction which found that achievement motivation is able to predict success or failure, contrary to B. F. Skinner's thesis that reenforcement is the only influence, and a project studying Martina Horner's concept of "fear of success" among women.

Horner maintains that a certain percentage of capable women will fear success at jobs because of role conflicts. The project supervised by Entin found that among the black population this role conflict doesn't exist, and among whites the problem is nowhere near the 50-60% found by Horner. Entin admits that the samples were small. The students, who worked with girls in Cleveland high schools, found it hard to get volunteers, particularly among the blacks.

During the spring quarter, Entin taught a course in social motivation and influence, which was jointly listed as a UP course and a course in social psychology. With an enrollment of 200, he experimented with self-testing and also employed on the class the principles of persuasion, which he taught. He found he was able to reduce text anxiety, and the new testing mode is now used by other members of his department.

Half of the students who worked under Entin decided that psychology wasn't their field, but he is particularly pleased that he could show that undergraduates are capable of professional research, within a supervised structure.

During the 1973-74 year, Dr. Gyi (assistant professor of interpersonal communication) taught two courses otherwise not offered by his department.

In a course entitled "Propaganda and Persuasion" he had students come to the basic theories of propaganda on their own. He gave them quotes from propaganda sources, as: "People are like sheep. They will follow any leader with an efficiently managed propaganda machine," from *Mein Kampf* and had them write reactions supported by documented research. He was thus able to hold traditional theories up to question and explore aspects of the field impossible to examine otherwise.

Dr. Gyi's other course was "Paralinguistics." Sixty-five percent of communication takes place on the nonverbal level. Language is cross-checked and often contradicted by tone, rate and gesture. Certain subcultures, as blacks, gay people or youth, have nonverbal codes unknown to outsiders. The course studied forms of non-standardized behavior to which meaning is attached, including the gestures of children prior to language and the types of gestures used in playing different roles. Students did projects, which attempted, successfully and unsuccessfully, to penetrate the codes of subcultures.

The present University Professors consist of a diverse group whose tastes, interests and interpretations of the award vary as strongly as their personalities.

Dr. Sung Ho Kim (assistant professor of government) is taking advantage of the award by trying an interdisciplinary approach to deal with the problems of human survival. Instead of his usual political science source material, he will use psychological, sociological and economic literature. The courses are: Sources of Danger to Physical Survival, Sources of Danger to Spiritual Survival and Strategies for Action. Dr. Kim tries to encourage a full appreciation of and participation in life, to counteract the "industry of voyeurism" that encourages a dichotomy between the superstar and the superaudience. One watches someone else's life rather than enjoying one's own, which is bad for both mind and body. "The most important thing in life is humanistic training. If you learn to appreciate music and literature, etc., you carry with you a beautiful world wherever you go. In America the world of the imagination is readily accessible — a five-dollar record will provide a beautiful performance. In this respect America is a gold mine but people don't realize it — they haven't been taught to appreciate it when they're young." What is most important to Dr. Kim as a teacher is "the psychic income of meeting talented, exciting young people, those who return and say, 'If I hadn't taken your course I wouldn't be what I am now.' "

The courses Dr. Edgar Whan currently teaches as a UP are consistent with his original conception of the program. He is attempting to make the student independent by reducing contact with the teacher. He is currently supervising field work by students who spend an academic quarter at jobs of their choice as interns. Each student will eventually present a paper or do some other project based upon his or her experience. It is hoped that this will increase a student's motivation and make him responsible for his output, in contrast to the student who relies on the teacher for programming. At the moment, two young women are working under Dr. Whan. One is a Greek-American who has read several novels by Kazantzakis. She is now travelling in Greece, visiting the sites described by the author. The other, who has done research on the Pueblo Indians, is currently working in New Mexico with the Bureau of Indian Affairs. Next quarter, Whan will supervise two young men, one who hopes to be a lawyer, and who will apprentice himself to a practicing attorney for a total immersion in the legal system, and another who hopes to be an actor, and will work for the quarter with the Creative Theater in Los Angeles. Whan will also be teaching a course in contemporary ideas, in which other UPs will lecture. A student in that course will then have contact with nine other professors from different fields who are vitally involved with students.

The flexibility of the program is illustrated by the following substitution. Nicholas Dinos (professor of chemical engineering) had to resign as UP, and was replaced by Manuel Serna-Maytorena (associate professor of modern languages). Serna was selected the year before, but was unable to serve while working abroad on University business. He is now filling Dinos' vacancy with a course entitled "A Peripatetic Approach to Spanish," which is a variation of Conversation 341. He takes the group to various places and has them react. He then gives them a vocabulary of 100-150 words and expressions to turn their reaction into a conversation or an essay and follows the first visit up with a second one of similar kind, in which the student is expected to talk in Spanish about what he or she sees. Their first visit was to the faculty art show, followed by an outing at the Trisolini Gallery.

Though it is a four-credit course, Serna adds an hour of contact in his office, weekly, for the 21 participating students. The group also attends the weekly conversation hour which provides interaction with the University's Latin-American community.

Serna teaches grammar to the individual, according to the mistakes made on the weekly papers. He will permit a student to make 1,000 mistakes on a paper, but not repeat the same ones. Serna will carry the same basic group through the year, to verify and improve upon his approach.

Dr. Roger Quisenberry (professor of electrical engineering) is restricted by his department's load from stepping very far outside the regular curriculum, but instead is doing something he's wanted to do for some time. He is supervising engineering students who are gathering information on ultra-high voltage power engineering. They are dealing with the problems of generating energy in areas where coal is plentiful (like Applachia) to power deficient areas 600-1,000 miles away. The main problem in long-distance power generating is one of excessive transmission-line power losses, and it is hoped that the research he supervises will make a contribution towards the solution. His course will be serving a critical social function, and enabling him to do something that otherwise would not have been possible for him.

Dr. Samuel Crowl (associate professor of English), a Shakespeare man, will use the award to attempt to get Shakespeare to a broader audience. He will teach a course on Shakespeare on Film, a course for high school teachers in reading Shakespeare aloud to get them more familiar with the texts, and he will take a group to London in the spring to study Shakespearean theater there. The Shakespeare on Film course is open to everyone — it is meant for fine arts people, engineers, film, people, etc., those who might otherwise be uncomfortable with Shakespearean texts, possibly kept from the meaning of the plays by slumbering imaginations.

Dr. Donald Borchert (associate professor of philosophy) is presently being allowed to do something he has never done before. His course, Models of Humanness, will permit him to deal with Marx and a number of psychologists and philosophers in a combination he has never had the opportunity to create. The course will be a quest of a viable model as a foundation for social development, a groundwork for ethics. He will also be teaching a course in demonology and one on the theology cf hope, in quest of a spiritual groundwork as the basis of a new consciousness. In Dr. Borchert's words: "Man's consciousness has evoked the need to recognize his ultimate fragility, his eventual death. To counter this, he has surrounded himself with an arsenal of things, giving himself the mistaken feeling that he can manipulate his survival. The result is to give oneself a sense of thingness, of being manipulated, leading to a sense of futility. If one realizes, like Sartre, that he is 'no thing' he can open an entirely new realm of experience and human possibility."

There is a lot of debate about the success and value of the University Professor Program. One question is raised by the nominees themselves, who see many of their worthy colleagues going unrewarded. They hope, though, that in time, their colleagues will also be chosen for the award. The selection process itself has been refined and altered from its inception so that the award is not a simple election in itself. If it were, arts and humanities professors would dominate since they teach the largest number of students.

The University Professor Selection Committee consists of three student representatives from each undergraduate college (appointed by the deans), a student appointed by the Dean of Afro-American Studies, and six student members-at-large elected by the other committee members. The selection procedure has three basic parts:

1. Campus-wide nominations by ballot for outstanding full-time professors. This occurs during preregistration week of fall quarter.
2. Selection of the top ten nominees as a result of committee examination and class visitation during winter quarter.
3. Official appointment by the vice president and dean of faculties after consultation with the respective department chairmen and deans.

The Selection Committee, working out of University College, spends a large amount of time visiting and evaluating all those who are elected. After the professors with the highest number of votes are visited in class and interviewed afterward, by teams or individual members of the committee, the nominees and several alternates are selectd for final approval.

All of the University Professors interviewed here had praise for the members of the committee with whom they had contact. Sam Crowl remarked that he was visited by 15 of the 22 members of the committee. "If they had to visit the other 20 candidates, they would have had to spend the equivalent of a year in the classroom — in addition to their regular coursework." And there is the problem for members evaluating professors outside of their field — particularly in the sciences. Members then have to look for the kind of rapport a professor has with his students, and what kind of enthusiasm the teacher inspires.

All of the past and present University Professors to whom this writer spoke are committed to an understanding and betterment of the human condition. While the debate about the program continues, it appears to be fulfilling the purposes Ed Whan had in mind, recognizing a student's role in choosing his or her own destiny and binding both students and teachers closer in their search for betterment. *RRF*

PAINTING BY PETER COPELAND OF THE SMITHSONIAN INSTITUTION

Marine Archaeology

Sunken ships! Treasure fleets! Who among us has not felt the romance of such phrases? Even the most land-locked of us has toyed with far-fetched ideas of diving expeditions to investigate the watery secrets of long-lost wrecks settled on the ocean's floor. But how many have ever pursued the notion?

Among those who have are two Ohio University faculty members. Dr. Patricia Jones-Witters and her husband Dr. Weldon Witters, both in the University's Zoology Department, have been engaged in such activities for two summers.

Several years ago the Witters spent part of their summer vacation in the South Seas where they were introduced to the sport of skin-diving. They were overwhelmingly impressed by the beauty of the underwater world and pursued the sport further, taking Scuba-diving instruction at Ohio University. They progressed through the elementary and intermediate stages in the pool in Bromley Hall. When they reached the advanced stage they took their final deep-diving tests in the Salisbury Quarry, during the winter, with water temperatures hovering around 52 degrees. Armed with certification attesting to their training and ability to handle themselves in open-ocean diving situations the Witters were able to sign on in the summer of 1972 with an Educational Enterprises International (EEI) expedition to investigate a wreck nine miles off the southeast coast of Bermuda.

A sand gun dredges up sand covering the lower deck of a ship.

Patricia Jones-Witters lies on the ocean floor to sketch a gunport of a long-submerged wreck.

PHOTOGRAPHS BY WELDON WITTERS

The remains of a large merchant ship had lain in 25 feet of water for over 300 years. Though its position was known, nothing was known of its country of origin, its destination, its cargo or why it sank. Funded partially by the Smithsonian Institution in 1972, the EEI expedition was formed to answer these questions. A 1973 expedition was funded in part by the Philadelphia Maritime Museum. The National Geographic Society was also involved in the dives, to the extent of sending a photographer along. Some pictures were used in a recent issue and other photographs appeared in the National Geographic book *Undersea Treasures.*

Though thoughts of Spanish gold and other treasure may have lurked in the back of the divers' minds like fish in the fan coral, archaeological finds were the main goal of the expedition. The ship under investigation (dubbed "The Tankard Wreck" by the divers, from a pewter drinking cup found among the debris) was built probably in the mid-17th century and almost everything we now know about ship construction of that period has come from studying just such wrecks as this. In that period ships were built not in accordance with drawn plans but under the close and direct supervision of a master shipwright, who carried the knowledge and plans in his head. The Philadelphia Maritime Museum is particularly interested in increasing our store of knowledge about 16th- and 17th-century shipbuilding and discoveries made on wrecks like The Tankard about bracing, joining, etc. are extremely valuable. Even the measures taken to rectify a building error can be informational.

Finding long-submerged wrecks is not an easy thing. It isn't as if one could look through the water and see the perfectly preserved vessel sitting there, wreathed in ghostly shrouds of seaweed. Rotting action of the water and the depredations of teredos or salt-water shipworms quickly destroy the wooden timbers. The most effective prevention of this destruction occurs when shifting sand covers the ship, but this also hides it. Encrustation by coral completes the camouflaging process.

According to Dr. Weldon Witters one of the things which led to the discovery of The Tankard in the first place was its ballast. The height of the masts, in proportion to the depth of the keel, in old sailing vessels created a very real problem. Wind pressure against the sails, particularly in heavy weather, could roll a ship over unless there were sufficient weight in the hold. Usually the cargo was not enough, so ballast, in the form of stones was added. English blue flint was a favorite for centuries until the advent of the flintlock rifle made it too valuable for ballast purposes.

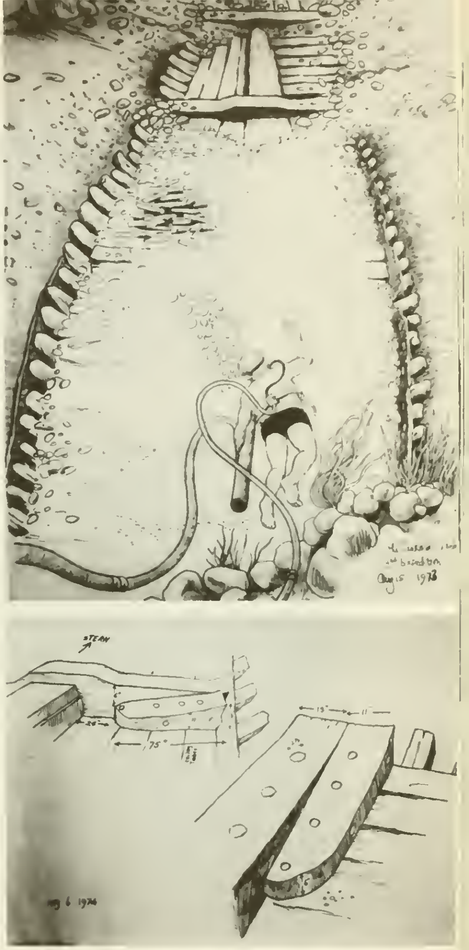
If a ship tore her bottom out against a reef the ballast stones would tumble through the hole, leaving a line of stones pointing from the point of impact to the final resting place. Such relatively straight lines are unnatural to the ocean bottom and have sometimes led to the discovery of wrecks. Even if such a trail does not exist, the mere presence of stones jumbled about, particularly in an area such as Bermuda where stones are not part of the geologic phenomena, can be clue enough to the presence of a wreck.

Once the wreck has been located the investigation is a tedious one. Sand has to be shifted from the timbers and this is usually done with a suction device which draws the sand and water up through a screen. A large tube carries the matter to the surface where the water and sand are again screened in order to locate artifacts. As objects too large for the dredge are uncovered their location must be noted in location to the rest of the ship to give clues as to the use of such articles, the conditions under which the ship sank or other information. One task which Dr. Patricia Jones-Witters performed on the expedition was to make underwater sketches of many of these large objects in their relative positions in the ship. Information is later classified and inferences are drawn. Slowly, sometimes with one piece of information completely negating a previous one, a picture of the ship evolves.

With The Tankard two years of investigation have given the profile of a mid-17th-century ship somewhat larger than was usual for the period. Clay pipe fragments, a wooden-pegged leather bootheel and a brass buckle believed to be a gentleman's knee buckle all point to a period between 1630 to as late as 1770. A rosary bead indicating a Catholic on board, fragments of olive containers and odds and ends of mahogany wood from the Spanish-held lands in the Americas point to a ship of Spanish or Portuguese registry. Her spruce or pine timbers suggest northern European manufacture, as does the Swedish word "HIIN" carved into a piece of planking. It was standard practice for the Mediterranean countries to buy and sail ships built to the north where timber best suited to ship construction grew.

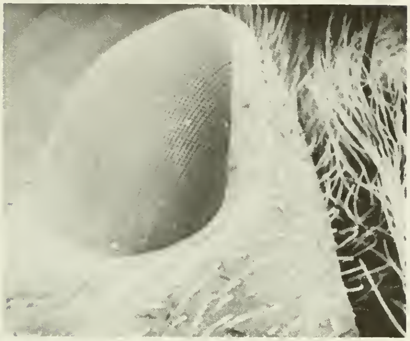
No human remains were found on The Tankard, but horse teeth, hog tusks and dog claws were found in what is believed to be the ship's store of provisions. The absence of human relics plus the axe marks on the timbers have led to speculation that the ship hung up on a reef long enough for the crew and passengers to get off in small boats and long enough for salvagers to recover valuable iron fittings. Firewood pinned beneath ballast stones and exceedingly small fragments of pottery indicate that the ship was rolled violently from side to side, suggesting that she sank in a violent storm.

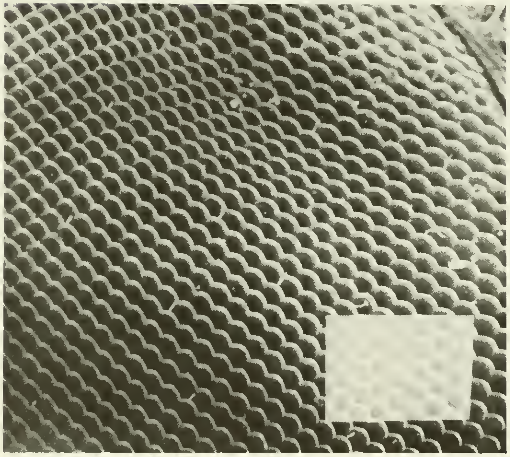
All of these small clues add up to a definite picture, which in turn contributes to the larger picture of maritime activity in the early colonial period of the United States. The Witters have managed to find a way to thoroughly enjoy themselves while making definite contributions to a field of knowledge. In addition, Weldon Witters has acquired a sizeable collection of underwater slides which are valuable to his zoology classes, showing samples of underwater flora and fauna. ❧ *PLB*

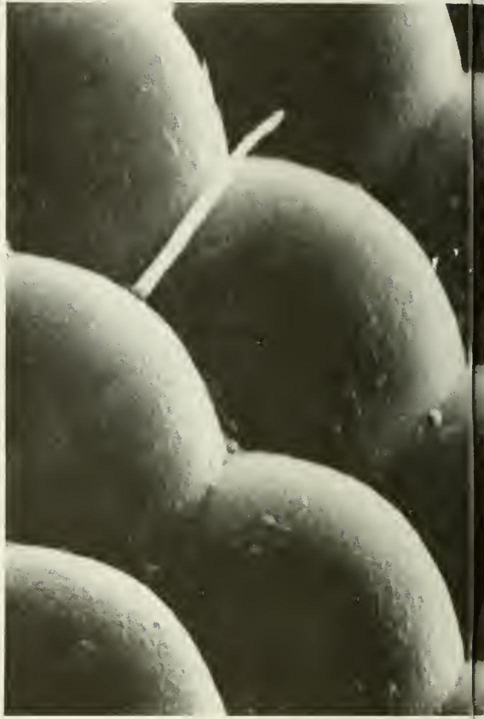


DRAWINGS BY PETER COPELAND OF THE SMITHSONIAN INSTITUTION

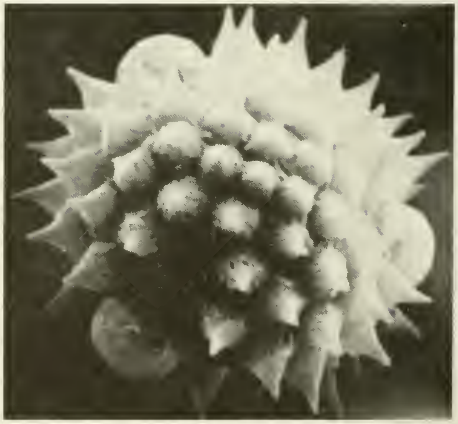
PHOTOGRAPHS BY RICHARD GAARDEN EXCEPT WHERE INDICATED







Top left is the head of a fly. Below that is a close-up of the eye; the bright rectangle is the area enlarged at the right. The spiked sphere to the right is a pollen grain. Any wonder why we sneeze? To its right is a stereo needle in the groove.



U's Scanning Electron Microscope

Anton Van Leeuwenhoek, generally credited with the invention of the simple light microscope in the 17th Century, would not be surprised at today's advances in microscopy. Though three centuries have intervened between his invention and today's complicated microscopy, the basic principles are the same. The wavelengths of light are the ultimate limiting factor of light microscopes, but electron rays, focused on or scattered over an object, can be made to function as light rays, obtaining much higher resolution.

Ohio University owns and uses two electron microscopes, maintained by the Botany Department in Porter Hall. (The Zoology Department also maintains a conventional electron microscope.) The scanning electron microscope (SEM) and the transmission electron microscope (TEM) are companion instruments, serving a dynamic and new research function.

The fundamental research for the electron microscope began in 1924 when the French physicist de Broglie found that electron beams can be used as a form of wave motion, and in 1926 it was discovered that magnetic fields could act as lenses for electron beams. In 1931 the first two-lens system was devised.

The three basic parts of an electron microscope are an electron gun and condenser which focuses the beam; an image-producing system consisting of an objective lens and a moveable stage, and an image-recording system, usually an outfit similar to an oscilloscope, and a camera for taking still photographs.

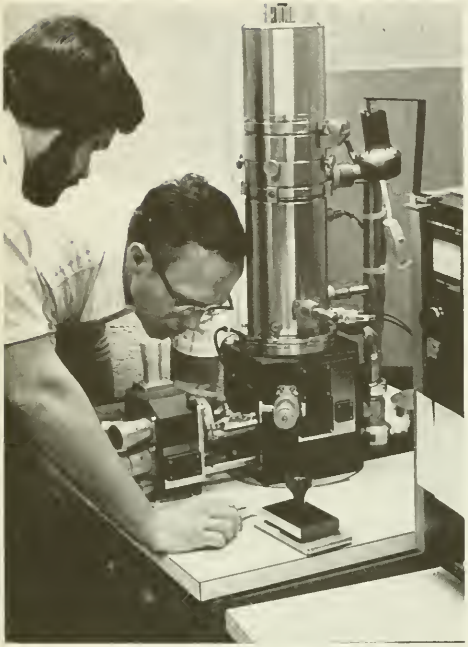
The TEM is the logical outgrowth of the OLM (optical light microscope). The TEM offers a resolution ranging from 20 to 100 times that of the OLM. But, like the OLM, the conventional electron microscope requires thin layers of a specimen and offers a two-dimensional view. The scanner or SEM is basically a stereo-microscope, which allows direct observation of complicated topographical surfaces.

The SEM, like the conventional television, creates a point-to-point correspondence between an object and an image. The electron probe sweeps the object which divides the picture into many elements in time series. A simultaneous sweep of an electron beam on the surface of a cathode ray tube makes the picture visible.

The instrumentation is as follows. Electrons are literally boiled off a heated tungsten filament and accelerated. They hit the surface of the specimen as a finely focused electron probe. At the same time, the probe generates signals which can be made visible. The cathode ray tube used by the observer is synchronized with the scanning unit, so that each point made visible on the screen corresponds to each point on the specimen. The two aspects that allow for the three-dimensional view are the great depth of field created in being able to focus the electron probe (similar to stopping down on a camera), and a detection system that picks up all electrons. The incident angle of the probe governs secondary electron emission and helps create image sharpness and shading.

Biological specimens are of low conductivity, and it is therefore necessary to coat them with a heavy metal. Gold and

PHOTOGRAPH BY HARRY SNAVELY



Above, lab technician Richard Gaarden and Professor Robert Yeats adjust the moveable stage on the SEM. At the right, Gaarden tunes in the SEM console. The image on the screen at the right is an enlargement of detail on the left screen.

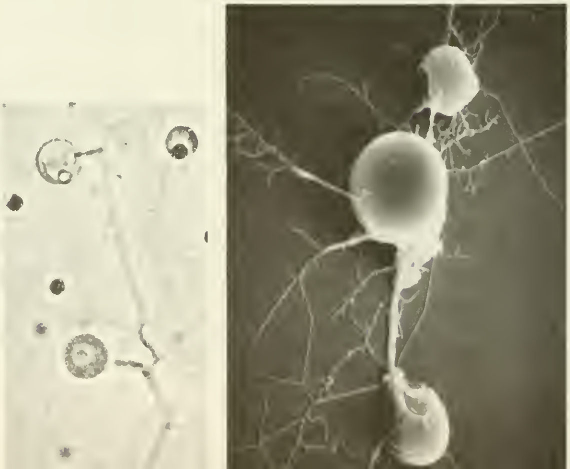
its alloys are some of the most effective, though palladium and aluminum are sometimes used as well. Specimens are mounted on a "stub," or specimen-mounting block and coated with gold evaporated in a vacuum. The stub is then placed on the moveable stage, which operates much like the stage in an OLM and a vacuum is created. A light goes on when the proper vacuum is reached.

There are two four-by-five screens for observation. A small portion of the image on one screen can be enlarged on the other. In addition, the second screen is fitted with a camera which uses Polaroid film and can make negatives as well as positives.

The SEM and TEM are housed by the Botany Department, whose members are currently the most frequent users. Dr. Charles E. Miller, chairman of the department, spoke of the gap between prior knowledge and what the SEM offers. "Often we have no past experience to interpret what's being seen. We have nonvisual concepts of what things are like, and sometimes it takes us a while to realize what we have before our eyes."

Most of the work presently underway in botany, using the scanner, is taxonomic, it standing to reason that what can now be seen can now be classified. One person is working with ferns

PHOTOGRAPH BY HARRY SNAVELY



The sexual reproduction of chytrids as seen through an OLM (far left) and the SEM. The two contributing thalli are at the extremes of the pictures, with the fusion bodies at the centers.

The pictures of chytrids seen through the OLM are reprinted by permission of *Mycologia*, Elizabeth D. Moore and Charles E. Miller. The SEM pictures of chytrids appear through the courtesy of Charles E. Miller.

and another is identifying algae. Two projects of particular interests are being carried on by Dr. Miller and by Dr. Thomas E. Wagner in chemistry. Dr. Robert Yeats, professor of geology, used the SEM in underwater research written up in the August 1974 issue of *Geotimes.)*

Miller is studying the sexuality of chytrids, aquatic fungi that help break down organic materials to their basic chemicals. The spore cases of chytrids will send out "root systems" into pollen, exoskeletons of insects, sunburn peelings and other organic substances.

Asexual reproduction occurs when the mature fungus issues swimming spores. Chytrids also reproduce sexually when the "root systems" of two sporangia (spore cases) join. The separate nuclei will migrate down the thalli and form a fusion body, which grows a thick wall. The new structure is able to overcome poor environmental situations in contrast to the asexual offspring.

The SEM is making it possible for Miller to corroborate this life cycle and to learn more about the contributing thalli. He is able to observe the different stages of the fungi in developmental series, having a closeup view never before possible.

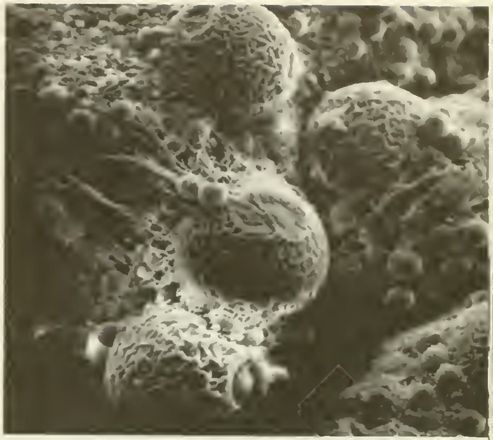
Dr. Wagner's research (see March 1974 issue for mention of his research in cancer cells, also employing the SEM) is in sharp contrast to Miller's. Wagner is engaged in a many faceted project observing the process by which sperm cells release their chromosomal contents. Using the sperm of horses, he is studying the structure of chromosomes in sperm, how they get out, what changes take place in the DNA and the associated protein, and what changes take place in the three-dimensional structure and density. So far, he has been able to observe the release of chromosomes outside the egg. Now he wishes to observe and show the release during the actual process of fertilization. In collaboration with veterinarian A. P. Smith, he will use mare ponies (mining ponies have left numerous progeny throughout the area). Five or six mares will be bred at a time. Their ova will be removed at time intervals and surgically ruptured, letting the material flow onto stubs, and the sperm will be sought under the SEM. It is hoped that the release of the chromosomes will be observed in different stages. Wagner, who raises Morgan quarter horses as a hobby, is also involved in a pilot program in artificial insemination of horses.

Research in zoology is also making use of the SEM, helping solve the mystery of communication between wolf spiders. Graduate students constantly make use of the machine. Members of the scientific community may contract to use the machine through Dr. Miller. A fee is required for beam time by the hour, plus a fee for each photo. Richard Gaarden is the lab technician for the SEM.

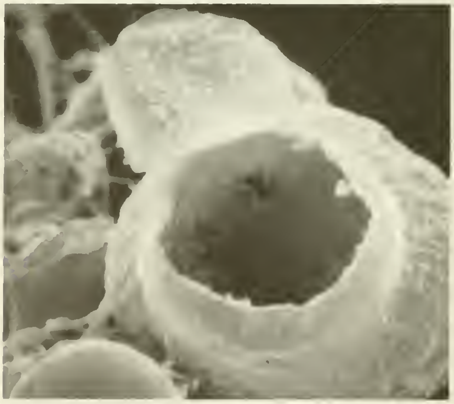
The SEM cost approximately $60,000 and has been operating for about one year. A grant from the National Science Foundation paid for it, with money for related equipment coming from the University's Research Institute.

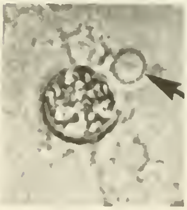
The SEM has been used in quality control for some time, for example in testing for cracks in steel beams, but did not become commercially available until 1965, when biological use of it began to be made.

The view the SEM offers of the unknown can be awesome. As one member of the Botany Department exclaimed, "In half an hour I was able to see what might have taken me six months or a year to learn otherwise." ❧ *RRF*



Above are several spore cases and their asexual offspring. Below is a spore case releasing spores through an open flap. In the two dimensional view at the bottom (seen through an OLM), the flap is the dark area at the top. The arrow points to a developing resting body.





Central Food Facility

Unique among the food-processing plants of major American universities is the Central Food Facility at Ohio University. It is a model of its kind and institutional food handlers from all over the United States come to see it in operation. Construction costs on the Ohio University plant totaled approximately 2.5 million dollars and the structure was financed solely through the sale of revenue bonds. The previous foodstores operation was housed in an antiquated ice plant built in the early 1900s. It was acquired by the University around 1945 and converted into a centralized storage area for all food items.

The new plant was opened in 1972 and ushered in a new era of food service—centralized production to minimize costs. Centralization results in economy, quality and ease of operation. The food building is designed to handle the following product categories: produce and dairy products, frozen foods, frozen meat products, fresh meat products, baked goods, vegetable processing and nonperishable items. All are stored and processed under controlled temperature and humidity.

Space, which was the bane of the old facility, is the boon of the new. The current building covers a total of 48,340 square feet and has 20-foot ceilings. As a basis of comparison on floor space, Memorial Auditorium on campus has a total square footage of 46,846. With the amount of space at his disposal, and with the efficient arrangement of areas within the building, Gene Reed, director of food services, is able to take advantage of peak buying periods in the acquisition of staple and canned foods. All storage areas of the building are designed to take wooden pallets which provide maximum space utilization. Cases of canned goods, instant potatoes, noodles, etc. are stacked on the pallets usually to the height of three cases. The pallets (wooden platforms about 32 x 40 inches, raised a few inches from the floor to allow passage of the tines of a forklift truck) are then lifted onto steel shelving capable of holding four pallets. Thus, in a floor space of three square feet, one hundred cases of food can be stored.

It takes at least two to handle the dough for the doughnuts made fresh daily.

Freezers and coolers are located in the middle of the building to minimize the distance between the delivery area and the freezer and preparation areas. Frozen foods which arrive in refrigerated trucks can be whisked from the trucks into the freezers with no delay. All danger of defrosting, even in the hottest weather, is virtually eliminated. When these same foods are needed in the preparation areas they can be moved with equal efficiency. Furthermore, when such items as pies and other desserts are prepared in advance they can be moved immediately into the blast freezer for quick-freezing and then into the holding freezer for longer-term storage.

The meat cooler is held at 33°F. for storage of meat items that do not require freezing, such as bacon, sausage, etc. The meat freezer, slightly larger than the cooler, is held at — 10°F. and is used for storage of meat products for up to 12 months. Attached to this is a blast freezer about the size of a normal living room. It is kept at a temperature of — 30° and is swept by a 50-mile-an-hour wind. It quick-freezes meat to retain flavor and maintain quality.

All fresh fruits and vegetables are held in the vegetable cooler at a temperature of 38°F. Produce is moved across the hall into the vegetable processing room which is kept at a temperature of 65°F. to retard spoilage during handling. After processing, the vegetables are protected in special stackable carts until time to be shipped to the dining halls.

The bulk freezer is large enough to accommodate forlklift trucks used to transport and stack foods within it. The −10°F. temperature is maintained for frozen fruits, vegetables and eggs. Fruits and vegetables usually are purchased in 150,000-pound lots which will supply the University's needs for about two months. Frozen eggs are purchased in 500-case lots, equal to one and one-half months' supply. Such eggs are used in baking, in sauces and as scrambled eggs and do much to stabilize the University's egg costs. Frozen eggs can be bought in the peak season at lowest prices and they greatly reduce the labor factor; it may seem that a minimal amount of effort is needed to crack an egg, but when that effort is multiplied into the thousands it is formidable. Even using them primarily only for the fried eggs served about three times a week for breakfast, the food service staff cracks open about 27,000 dozen eggs a year.

All nonperishable items are stored either in the bulk storage area or on the order-pick lines situated in an easily accessible location in the dry-storage area. Items are removed from bulk storage and placed on the line as they are needed. All food items are code-dated and they are rotated on a first-in, first-out basis.

The bakeshop on campus is a wonder of efficiency and speed. Two-crust pies are made at the rate of 50 dozen per hour and cookies at 1,200 dozen per hour. These and almost all other items are baked and frozen prior to shipment to the dining halls. The only exceptions are doughnuts which are made fresh daily, a process which beautifully perfumes the air for at least a block around the Central Food Facility.

The volume of food received, processed and consumed at the University is mind-boggling. For instance, on the average the Ohio University Central Food Service prepares about 100,000 meals *per week;* for Nelson Commons dining hall alone, 8,000 a day. This means such things as frying 90 dozen eggs, grilling 2,200 cheese sandwiches, tossing 320 heads of lettuce.

Recently a Publications Office staff member got first-hand experience with the volume of food processed in the dining halls. At the end of the three-hour period during which she worked she had buttered some 1,200 cheese sandwiches, set out almost 400 dishes of gelatin and cut 60 cherry pies into eight pieces each—480 pieces of pie.

In spite of the immense volume, quality is not stinted in the food services. All food items are tested and analyzed, if necessary, prior to purchase. They are tested again when the shipments arrive at the Ohio University docks, to assure that the quality of products delivered is the same as the quality of products purchased. In addition to this quality control the test kitchen and laboratory also test and standardize recipes. Taste-testing sessions by selected members of the University community occur with some regularity to obtain unbiased opinions of recipes before they are made up in batches of hundreds of gallons or loaves or cakes.

Even after the received goods are certified to be of high quality and recipes are standardized as excellent the optimum standards are not relaxed. When baked goods are judged to be not up to par—cracked pie crusts, sheets of gingerbread which rise unevenly, misshapen cookies—they are rejected for use in the dining halls. This is not, however, as prodigal and wasteful as it sounds. Such foods, though not up to the University's standards, are still good, healthful items and are sold at reduced prices in a thrift shop. The shop is open two days a week to members of the University community. With such a system the University is able to realize a return on what might have been wasted; and faculty, staff and students are able to enjoy high-grade baked goods at low cost.

Complaints, of course, are always heard against dormitory food. It is so today, it was so when any alumnus reading this article was a student and it was probably so when Socrates' students collected for meals. It is part of human nature, a way of campus life. All told, the greatest single criticism that can be levelled against dining hall food is that "it isn't the way my mother cooks". Serving the collective palate precludes the use of extreme seasonings, but moderately seasoned foods are too bland for some and far too spicy for others. The dining halls come closest to pleasing the majority of students when they serve a menu closely patterned after the fast-food hamburger chains—hamburgers or hot dogs or both, french fries and carbonated beverages or milkshakes. A grilled burger on a bun, with a dollop of mustard, a splotch of catsup and a pickle, may horrify the parental palate, but the students love it. It brings back fond memories of evenings with hometown buddies.

The pie machine can turn out 50 dozen two-crust pies in an hour.

Of course, students sometimes do have legitimate complaints about the food. To route these to the people who can do something about them, the Central Food Facility instituted a system called Foodback. The student writes his or her complaint on a form which goes first to the dining hall manager. A personal interview is arranged and usually the problem is settled at the first level. If not, an interview is arranged with the director of food services. Among the innovations which resulted from the Foodback system are the introduction of a seconds program, through which students are welcome to unlimited second helpings of all but a few food items such as steak, and the serving of carbonated drinks in the dining halls.

Mass-produced-food systems notwithstanding, occasionally someone has personal circumstances which demand an individualized approach to food. There are approximately 500 students within the food system who are vegetarians and for whom meatless meals must be prepared. Diabetics are required to eat restricted diets. Religious taboos eliminate some foods from the diets of certain individuals. To the extent that it is able, the dining hall program meets all these special situations. Often they can be avoided by the standard practice of offering a choice of foods. People can choose carefully among the possibilities and put together a substantial and varied meal which meets the restrictions of their own particular cases.

But it is not always so simple a matter. For instance, for the Jewish Passover there are rigid rituals surrounding the meals. Certain symbolic foods must be eaten and they must be prepared in a specific manner. The dining hall service is physically

OHIO UNIVERSITY LEARNING RESOURCES PHOTOGRAPH

The Central Food Facility is the only building on campus on which the University carries insurance on the contents, to cover the $300,000 worth of food stored there at any one time.

unable to meet many of the restrictions so a special arrangement has been made with Hillel House. Any student who wishes to be excused from his or her meal contract in order to eat the ritual meals at Hillel House will be excused provided proof is given of prepaid meals at Hillel.

Other efforts are made to accommodate the students' wishes. Any group of interested students may form a food committee to represent the residents of their dormitories. This committee then meets with the dining hall staff on a regular basis to discuss students' concerns, plan special events and devise menus.

One such special event was the preparation of a soul food dinner. At the request of students and in cooperation with the Black Studies Institute, which helped with recipes and cooking advice, the dinner was planned to be served after the regular meal hour. Anyone interested in participating signed up in advance and the dinner was considered a regular meal on the students' meal tickets.

Scheduled during the regular meal period, theme dinners have provided a welcome and interesting change of pace. Of course, the most popular of these is the steak barbecue which is held outside on the various housing greens. Last year a well-received theme dinner was billed as a Roaring 20s affair. The student help in the dining halls wore costumes of the period and served a special meal which was built around huge 75-pound roasts of beef. A typically German meal and one with a Polynesian flavor are planned for the fall quarter. Others will occur throughout the year.

On a more personal level, special items such as birthday cakes may be ordered from the dining hall, if four days' advance notice is given. A student who is too ill to go to the dining hall for meals may arrange to have a roommate or friend bring back a tray of soup, beverages, hot tea and gelatin. Box lunches will be provided for students who have class conflicts with dining-hall meal hours.

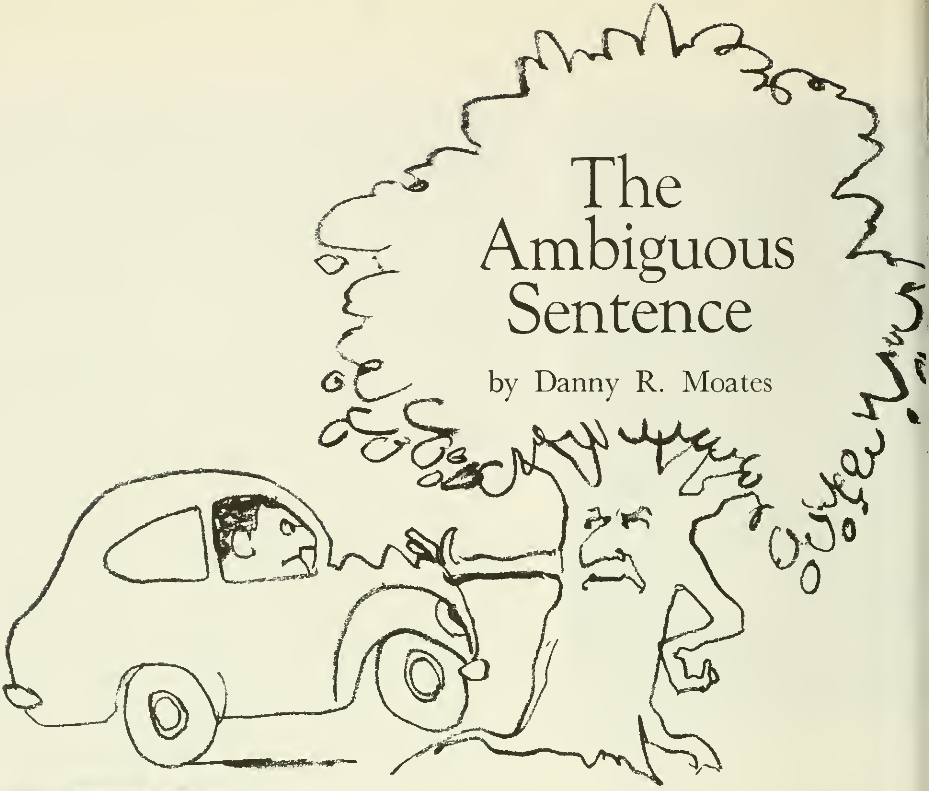
To an even greater degree than the average household, the Central Food Facility has been hard-hit by inflation. The facility operates on a fixed income from the sale of meal tickets at the beginning of the academic year and is not allocated more, regardless of what prices do in the ensuing months. But even faced with such increases as sugar going up 250 percent since 1973 and a 100 percent milk-price increase in one year, the problems have just started for the food services. Labor costs have risen, fuel is more expensive, replacement prices for equipment are higher. The Central Food Facility has managed to maintain its standards, but it is like swimming against the tide.

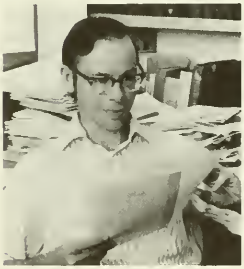
The ironic thing about it all is that no one seems to consider the Central Food Facility as a likely recipient of designated gifts. The importance of food services to the University as a whole is often overlooked. It is not as glamorous as intercollegiate athletics, but it is certainly more vital. Just as an army is said to march on its stomach, a university studies on its stomach. In an average day a student spends more hours in his or her dining hall than in any one classroom.

Anyone who is interested in seeing the marvel of the Central Food Facility in operation is encouraged to contact Gene Reed's office at 594-7887 to arrange for a tour. *PLB*

The Ambiguous Sentence

by Danny R. Moates





Dr. Danny R. Moates has been with Ohio University since 1967. He is an associate professor of psychology, with a specialty in psycholinguistics. In addition to his position as assistant chairman of his department, a role which involves him primarily as coordinator of graduate studies, he is a member of the Faculty Senate and serves on a number of University committees. When his professional duties allow him a little time to himself he enjoys hiking, backpocking, canoeing and jogging. On a less strenuous level he is a charter member of the Athens Soup Group and sings with the Presbyterian choir.

Dr. Moates claims five puns in his article and invites his readers to search them out.

A friend once told me, "I had a book stolen yesterday" and I was left to wonder whether he masterminded the escapade or was its victim. Although the careful speaker strives to avoid such ambiguous sentences, a growing number of linguists, psychologists and philosophers interested in language have begun exploring their meaning for science. I define an ambiguous sentence as a string of words which permits more than one meaning, as illustrated above or in "The car turned into a garage." Those interested in language find ambiguous sentences especially revealing of the structure of language, since they provide us good laboratory examples for separating the components of language. Moreover, they have spawned a kind of academic parlor game for those who enjoy diverting conversation.

A language has two aspects that are of special interest: (a) sounds and (b) meanings. When comparing languages one notes that the same meaning can be represented by different sounds in different languages. What we call a "tree" in English is called by the utterly different sounds of "Baum" in German, "ki" in Japanese, "arbre" in French, "élöfa" in Hungarian, "itache" in Hausa and "pununghahoy" in Tagalog. Thus the relation between sound and meaning is quite arbitrary and language learning for a child requires that he learn, among other things, the meaning of each new sound pattern (word) that he hears.

Now in that simple form, the job of vocabulary learning is difficult enough, since English has something over three-quarters of a million words in its lexicon, although most of us get by with a small fraction of these. However, the matter is complicated by the fact that most of these sound patterns have more than one meaning. The Oxford English Dictionary, for example, lists 83 meanings of "light," most of which are familiar and in daily use. A brief sampling of these includes: (1) the illumination which proceeds from the sun at daytime; daylight, (2) a gleam or spark in the eye, (3) a flame or spark serving to ignite any combustible substance; to strike a light, (4) state of being visible or exposed to view; to come to light, (5) of little weight, not ponderous, (6) to fall or settle on a surface, as a bird, (7) pale in color, (8) of food or drink that does not lie heavily on the stomach. Thus the number of *word meanings* in English is far greater than the number of *words*. When the Lord confused the people's language at Babel, He did a masterful job of it.

But this problem is turned to play by the poet, wit or scriptwriter who rejoices in similar sounds and mixed meanings. Puns abound in the history of comedy, from the most antique riddle—When is a door not a door? (When it is ajar)—to the most polished play on words. The only triple pun of which I am aware is found in the tale of three brothers who went west to raise cattle and wrote home to ask what they should name their ranch. Their mother replied, "Call it *Focus:* Where the sons raise meat."

But puns are not the only source of multiple meaning in language. Of much greater scientific interest is the ambiguous sentence. Sentence (1) below is an ambiguous sentence as shown in the meanings (a) and (b). Sentence (2), however, merely contains a pun on the last word of the sentence and is not ambiguous in the same way.

(1) Visiting sailors can be exciting.
    (a) Going to see sailors can be exciting.
    (b) Sailors who come for a visit can be exciting.
(2) California is wonderful despite its faults.

Puns are like birds. They're all around you if you listen for them. But the ambiguous sentence is of a less common turn and will be heard only by a sensitive ear and a properly deviant mind. Some of the following examples are contrived, but most were uttered in innocence.

The noted American linguist Noam Chomsky offers the following example

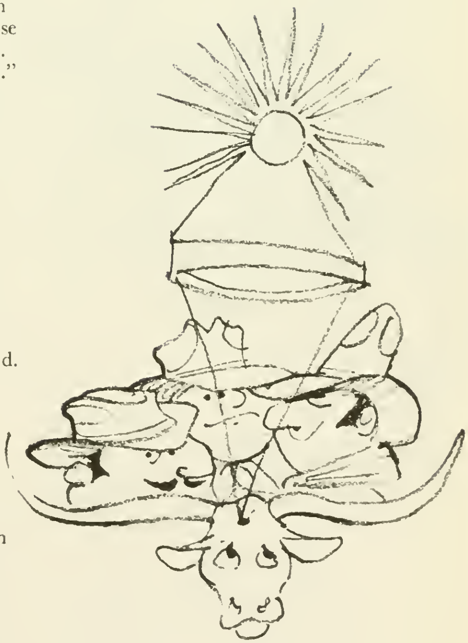
(3) He decided on the train.
    (a) He chose the train.
    (b) He made a decision while aboard the train.

The ambiguity arises from the way the preposition combines with the verb to produce a special meaning. Such combinations are fairly common in English. Another example, also arising from the way that prepositions sometimes combine with verbs, is

(4) The young cowboy shot up the hill.
    (a) The young cowboy filled the hillside full of lead.
    (b) The young cowboy raced to the top of the hill.
    (c) The young cowboy fired toward the top of the hill.
    (d) The young cowboy, standing up the hill, fired his gun.

A grislier sample is found in

(5) The young cowboy shot off his mouth.



Sometimes ambiguity hinges on whether a single word is taken as an adverb or as an adjective, as is the case for "little" in

(6) The coach soon learned how little Gary trained for the high jump.

Ambiguity also arises when the referent for a noun or pronoun is left unspecified. Two examples are

(7) The floorwalker fired the salesman with enthusiasm.
(8) Her friend fed her dog biscuits.

A homier example was provided by my unsuspecting nephew as he read me a "Peanuts" cartoon strip. Charlie Brown's little sister Sally was guilt-stricken for having accidentally taken a crayon from school. Charlie Brown sought to allay her fears by offering the suggestion

(9) Why don't you explain what happened to the teacher?

Now it is likely that the strip's creator Charles Schultz meant only one thing by that sentence, but my mind wandered off on a tangent, turning to such dreadful things as robbery, kidnapping or auto accident, each of which would have been a possibility of "what happened to the teacher". My nephew was not amused.

Passive sentences are especially subject to ambiguity, since "by", which appears in most passive sentences, may introduce either the subject of the sentence or the location of the action. Thus the double meaning of

(10) The snow was piled by the door.
(11) The car was stopped by a tree.

Occasionally sources of ambiguity combine to produce a truly mind-boggling statement. You might try your hand on the four meanings of

(12) The police were ordered to stop drinking at midnight.

Similarly, a high school student turned in the following observation in an English essay

(13) The young warrior was warned not to have a son by the Grecian Oracle.

(It helps to know that the Grecian Oracle was a women who sometimes foretold the future.)

A linguist friend of mine claims at least six meanings for

(14) Norman Rockwell painted me on his front porch.
  (a) Norman Rockwell painted a picture depicting me sitting or standing on his front porch.
  (b) Norman Rockwell painted a picture of me while I was on his front porch.
  (c) Norman Rockwell painted a picture of me while he was on his front porch.
  (d) Norman Rockwell painted a picture of me while we both were on his front porch.
  (e) Norman Rockwell painted my picture on the wall of his front porch.
  (f) Norman Rockwell daubed me with paint while we were on his front porch.

Now it might reasonably be asked, "How in the ever-lovin' blue-eyed world can a sentence have more than one meaning?" That, of course, is the interesting scientific question. Perhaps you would settle for a simpler question. "How can a sentence have even *one* meaning?" Indeed, most strings of words don't have any meaning at all, as you can easily show by stringing together a set of words drawn at random from the newspaper. The great majority of such strings are nonsense. What is special about a sentence?

Even choosing one's words carefully helps only a little. If one artfully selects the four words in "How about a light?", he obviously has selected a set which makes a sentence. But note what happens when the words are rearranged, as in "Light how a about" and "About a light how". Clearly these are nonsentences. A sentence not only must have well-chosen words, but a well-chosen order, too. For a four-word sentence there are 4!(factorial) = 4x3x2x1 = 24 possible orders of the words. In this example, only one of these produces a sentence. With other four-word sentences it is possible to hit upon one the words of which will rearrange to make a new sentence. But such a discovery is rare and when it does happen, the meaning of the new sentence is almost invaribly different from that of the original. A ten-word sentence, which is certainly of modest length for a speaker of English, can have its words rearranged in 10! = 10x9x8x7x6x5x4x3x2x1 = 3,628,800 possible orders. If you have a spare Sunday afternoon, you might want to see how many of these orders produce proper sentences.

Now, speaking English is a beguilingly simple matter. We all do it, sometimes in wearing generosity. Even children do it. But it obviously was not simple for the hapless Japanese student who exclaimed, "Japan has the grossest national product in the Far East!"

If you were going to build a machine that would speak English, how would you go about it? Well, first it must have a vocabulary, so you might list all its vocabulary items on punched cards or on magnetic tape. But how would it choose among the words in its vocabulary so that it would produce only sentences? Obviously not at random, since we have seen that most random combinations of words don't make sentences. Even if it were given some well-selected sets of words, how could it be programmed to insure that it chose them only in proper order, since we have seen also that hitting on the proper order is a rare thing if left to chance.

Perhaps the machine should have a sentence dictionary against which it would check potential combinations and orders for meaningfulness. But that would be a poor solution for two reasons. First, it avoids the issue. Second, it would be impossible, since there is an infinite number of sentences in English. (A trivial proof of this can be seen in the set of sentences which begins, "John loves one girl", "John loves two girls", "John loves three girls", "John loves four girls", . . . and can be extended, well beyond John's capacity, to infinity.)

Moreover, a sentence dictionary would be quite wasteful, since we rarely use a sentence more than once. You can verify this odd habit by alphabetizing the sentences from a newspaper or magazine article and noting how many are repeated. I will wager four of your favorite drinks that fewer than three percent of them occur more than once. The sentence is the ultimate throwaway.

There are, of course, a number of sentences that we use frequently to grease the wheels of social interaction, such as "How do you do?" and "Thank you", but even these represent only a small part of our utterances. Indeed, the person who repeats his sentences, like the person who repeats his jokes, will likely lose his audience.

Thus the use of a sentence dictionary for identifying the combinations and orders of words that constitute proper sentences does not seem to be a good solution. Let us look at a happier solution, one offered by linguists, whose job it is to discover the

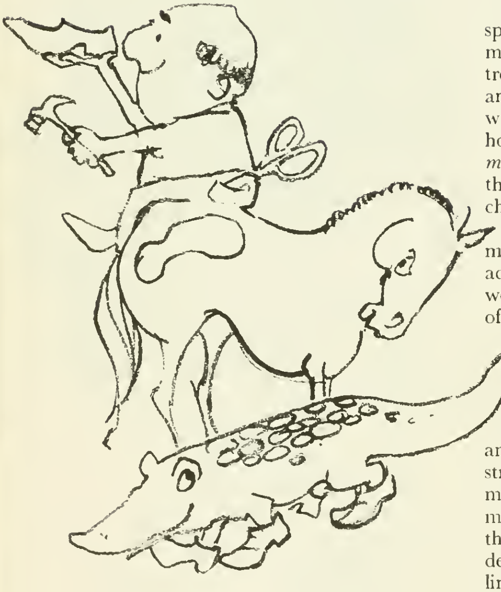
structure of language. That solution lies in the use of rules for constructing sentences. The rules specify the kinds of words (nouns, verbs, prepositions, etc.) that may be combined as well as their permissible orders. An adequate set of rules thus describes the *structure* of a sentence and does so by indicating the relations among the words in the sentence. Since words selected at random usually cannot enter into one of the acceptable relations specified by the rules, nearly all random combinations of words—and nearly all the random orders of these combinations—are meaningless.

This notion lets us return to one of the questions raised above: How can a sentence have even one meaning? The answer is this: A sentence has meaning when all its words enter into a structural relationship permitted by the rules of the language. Every sentence has such a structure and that structure is equivalent to its meaning.

You have probably already anticipated the answer to another of the questions raised above: How can a sentence have more than one meaning? The answer, of course, is that the words in the sentence enter into two or more distinct structures and these represent the several meanings. For example, the sentence

(15) The shooting of the hunters was terrible.

has two meanings which are roughly "The hunters were lousy marksmen" and "The death of the hunters was tragic". In the first meaning, the word "hunters" enters into the relation *actor* or performer of the action. In the second meaning, however, "hunters" is now part of the relation *object of* and is the receiver of the action.



Identifying the relations among words is something any native speaker does automatically and almost instantaneously. Listening may sometimes be boring, but it is rarely difficult. We have no trouble identifying quite different relations even among words that are very similar. We know that horseshoes are shoes *for* horses, while alligator shoes are shoes *of* alligator. Who would ask for horseshoes in a men's store? Track shoes, of course, are neither *made of* nor *worn by* tracks. They *make* tracks but, interestingly, that is not the meaning of "track shoes". Chicken feed is feed *for* chickens, but chicken stew is rarely fed to chickens.

Ambiguous sentences then are sets of words which permit more than one structure. Often the different structures take advantage of the different meanings which we have seen that any word in isolation may have. For example, three of the meanings of "run down" lead to the following sentence

(16) The boy ran down the dog.
    (a) The boy chased and caught the dog.
    (b) The boy ran over the dog with a car.
    (c) The boy spoke disparagingly of the dog.

Aside from being entertaining (if you have that kind of mind), ambiguous sentences have a scientific value. The fact that one string of sounds (the spoken sentence) may have more than one meaning supports the linguist's distinction between sound and meaning. The study of the sounds of a language (phonology) and the study of meaning (semantics) have each been developed in depth, by linguists. When combined, these two branches of linguistics contribute to a larger system, the set of rules which provide a complete understanding of the whole of language. When that set of rules has been completed, we should have a clear understanding of why booting a horse is strikingly different from shoeing him.

PHOTOGRAPHS BY MICHAEL FRAMPTON

Orienteering:
An Absorbing New Sport

by Loch K. Johnson

On many weekends the tree-covered hills of Athens fill with the sound and color of a new sport: orienteering. The command "Ready, Go!" disrupts the sylvan solitude as brightly dressed runners, responding to this signal, bound from the starting area and disappear into the forest. At one-minute intervals, other groups follow until all the competitors have vanished from sight.

Each runner carries two pieces of equipment vital to the day's outing: a compass and a map of the surrounding area. Covered with serpentine contour lines, elevation figures and exotic topographical symbols, and splashed with several colors, the map reveals—for the initiated—the location of boulders, cliffs, caves, streams, ponds, lakes, forests, meadows, swamps, peaks, valleys, trails, roads, strip mines and all the other features the runner may confront on his journey through the Appalachian environment. (The snakes you have to locate yourself.)

Unlike other maps, however, this one also has several numbered circles scattered across its surface: one placed, perhaps, at a stream juncture, another on a knoll, a third near a bend in an old logging road, a fourth by an abandoned mine shaft—usually ten to 15 in all. The primary objective of the sport is to orient oneself through the mapped terrain (thus the name orienteering), visiting each of these numbered circles in consecutive order. The individual who finds each location and returns to the finish line in the shortest time is the winner. In short, orienteering is a kind of sports car rally on foot.

The competition area is usually several square miles of forested terrain. Hanging from selected trees throughout the area are cloth "control points" made from red-and-white material and shaped like small box kites. These control points are placed to correspond with the exact center of the circles drawn on the competition map. When the runner sees the red-and-white marker with #1 painted on it, he knows he has successfully oriented his way to the first control point.

At each of the red-and-white control points the runner finds a small paper-punch. To prove that he has indeed been

to the control point, he carries with him a special control card on which he must punch the appropriately numbered square. Each punch leaves a different design on the card, such as a star symbol at control point #1. If there are 15 circles on the competition map, the successful orienteer must return to the finish line with 15 different designs imprinted on his control card. The designs must be in correct order.

One of the most exhilarating feelings in this sport is to see that red-and-white marker off in the distance. It is an especially gratifying sight if you've made some map or compass errors and spent the last 30 minutes or more searching for it! Coming upon a control point—accidentally or purposefully—brings the same sense of euphoria that accompanies the scoring of a touchdown or sinking of a 40-foot putt. No matter how fatigued or discouraged you might have been before, the appearance of that red-and-white speck through the trees brings a suddent uplift and you can scarcely wait to try your skill on the next leg of the journey. Once this thrill is experienced, the chances are you will join the growing ranks of inveterate orienteers.

Though orienteering may sound like the special preserve of marathon runners and other Olympians, it is not. It is very much a sport for the people. In Scandanavia, for example, more people participate in orienteering than any other sport. In the United States, the Stan Smiths and Jack Nickolauses of orienteering can be found and their training may involve running over 100 miles a week, but orienteering—like tennis and golf—can be enjoyed at different levels of fitness and expertise, by ordinary people.

Most orienteering meets have several classes of competition, extending from so-called "elite" courses for the experienced to beginner courses for the neophyte. The major differences between the courses are length and difficulty of terrain. The elite courses may be ten miles long or longer, which can mean much farther when you are hunting around for control points. The elite competitor also faces many difficult time-distance decisions, such as whether to run all the way around a steep elevation or to assault it directly. (A rough rule of thumb used by orienteers is that a detour of 100 meters takes about as much time and energy as an ascent of 25 meters.) The shorter courses are particularly enjoyable for someone who simply wants a stroll in the countryside but would like to have some extra fun by making a treasure hunt out of it. Families often go out as a group and take turns finding controls. This more casual approach to the sport is called "wayfaring" and is a most enjoyable way for a family to join together for a Saturday afternoon—and to keep fit at the same time.

The classes of competition are also divided by age and sex, though a younger person may run in a higher division than his own (up to a limit) and a woman may run in a men's classification. In the past year or two, several young American boys and girls not yet in their teens have developed into top-flight orienteers, foreshadowing a generation of superb elite orienteers, who will soon challenge Swedish and Norweigian dominance over international competition.

Expectant women have found wayfaring an effective and interesting way to maintain and enhance their health in preparation for childbirth. Last spring at the Appalachian Spring Orienteering Festival held at Dow Lake, near Athens, a visiting Norwegian woman eight months pregnant even won a trophy in the women's elite competition. Though she maintained only an easy jog, her navigation skills were so sure that she never erred on the course and thus saved precious time. The lesson of the hare and the tortoise is demonstrated weekly in every town with an orienteering site.

One of the most attractive aspects of orienteering is the small investment required in return for large profits of enjoyment. The orienteer just needs clothing to cover his entire body (a warm-up suit is perfect; running in shorts means legs badly scratched by the underbrush), a simple orienteering compass (available for about $6) and some running shoes (many prefer soccer shoes with small cleats to grip the hillsides). Maps are provided by the club holding the meet. The costs for the host club are also relatively minimal and are normally met by the small course fee which orienteers are asked to pay. When compared to the costs of most high school and intercollegiate sports, orienteering should be considered by educational institutions with financial problems. Within a decade orienteering is likely to be an Olympic sport and the students who begin to train now may have the privilege of representing this country at future Olympic Games. International Orienteering Championships are already being held every other year.

Another attractive feature of the sport is the relative ease with which the basic skills can be acquired. Fifteen minutes of introductory instruction is enough to prepare the newcomer for a trip around the beginner's course. The chances of getting lost in the woods after this first training session are very slim; and in that rare instance when a person does lose his way, nothing can match a forest full of orienteers for finding him quickly.

With a little practice, one soon feels completely at home in the woods. Many orienteering parents have commented on how this sport has given their children a new sense of confidence and self-reliance, in or out of the forest. The U.S. Army and the Marine Corps now use orienteering as a training activity not just because it is a good conditioner, but, particularly, because they think orienteering is an excellent method for preparing individuals to make decisions under pressure. A well-designed orienteering course is loaded with route-selection decisions, each of which must be made against the constant pressure of time and often, for the serious competitor, under conditions of extreme fatigue. Thinking on the move is the essence of orienteering, and this explains why it is widely known as "the thinking sport." The quick-witted frequently beat the quick-footed (though the best orienteers are quick at both ends).

Certainly one of the most enjoyable dimensions of orienteering is the companionship that accompanies it. The high spirits after a meet are reminiscent of that excellent rugby tradition whereby opposing teams join in celebration after the game. Orienteering is very much a social event, and everyone looks forward to the tales which ineluctably follow each meet. Time passes quickly as groups of competitors swap stories on route selection, new techniques, embarrassing errors and strange happenings on the course.

After one recent competition, a somewhat distraught young lady made the rounds to enlighten her colleagues as to

why she had stapled her control card perfectly—except for Point #4. She explained that as she reached this control point, a deer ambled up and munched away the red-and-white marker, gripped the stapler firmly in its jaws and fled.

Last year at an Athens meet, one orienteer from Dayton came to the finish line covered from head to toe in green mud. Early on the course he had confronted a stream but could not see its depth because the water was a dark green. He sat down on the bank and spent 10 minutes taking off his heavy boots and rolling up his pant legs. The stream proved to be only inches deep. Frustrated from losing so much time, he arrived at a similar stream later and roared into the water. His face still carried the look of astonishment that he must have felt as he went straight down six feet.

In a spring meet near San Diego, California, a middle-aged woman came sprinting into the finish area like the anchorman on an Olympic relay team. Her first time out, she had broken the course record. This was indeed a remarkable feat, for she was in poor condition and had taken up orienteering to lose several excess pounds. Finally catching her breath, she explained that her success was attributable to an eye-catching object near the last control point: nothing less than a *Crotalus ruber* (for you nonscience majors, that means California Red Diamond-backed Rattler!).

Needless to say, such incidents are exceptional. The typical experience for competitors is to come away from a meet with new friends, a greater appreciation of nature, a heightened sense of self-reliance and the pleasure of having exercised both the mind and body. As world-famous English orienteer, John Disley, has commented: "Orienteering is recreative in the original sense of the word . . . the individual has his batteries recharged and a feeling of release from the mechanics of life as the body is exercised and the mind absorbed."

Is orienteering a passing fad? Not on your life. Last year 11,600 men, women and children participated in a single orienteering event in Sweden. In Scandinavia, Israel and Canada, orienteering is taught in the grammar schools, and several colleges in North America, including Ohio University, presently offer courses in orienteering. The number of active orienteers in the U.S. has gone from 30 a few years ago to several thousand today; in the U.S.S.R., a reputed 700,000 people now participate in the sport! Around the world people are trying orienteering on bicycles, horses, canoes and skis, as well as on foot; some courses use a combination of these approaches. For those who want an extra challenge, a few meets each year are held in the middle of the night!

Orienteering is very much a sports wave of the future, and those living in the Athens area have an especially good opportunity for giving it a try. Not only is the terrain ideal and the local club well organized, but last year the National Headquarters of the United States Orienteering Federation moved from Virginia to Ohio University. So, if you'd like an introduction to the new sport in town, write the United States Orienteering Federation, P.O. Box 1081, Athens, Ohio 45701, or drop by the headquarters on the second floor of Lindley Hall. Not on weekends though, because we'll be on a hillcrest somewhere, lining up our maps and compasses, ready to thunder into the next valley.

Though now a citizen of the United States, Loch Johnson was born in Auckland, New Zealand, and came to this country in 1948. He earned his PhD from the University of California, Riverside, and has taught at the University of North Carolina at Chapel Hill and San Francisco State University. He came to Ohio University in 1972. He is an assistant professor of government and has served as a staff member of the United States Senate and as an American Political Science Association Congressional Fellow.

Johnson has long been interested in sports and was a rugby player and 400-meter hurdler in college. He is now a member of the United States Orienteering Federation Board of Directors and has represented the States in International Orienteering Federation conferences overseas. His wife Leena, a native of southern California, is a reference librarian at Ohio University.

Memorial Auditorium Renovation

The cultural season at Ohio University got off to a spectacular start early in October. As the first offering of the 1974-75 season, the University presented *Frula*, a lively and colorful production of Czechoslovakian folk dances.

As the audience assembled for the performance, long-time Artist Series buffs were surprised and delighted with the changes which have been effected in the building. The walls, rescued from their former drab institutional green, now glow warmly in tones of palest to medium gold. At the time of this writing delivery of the new stage curtains is imminent. When the set comes, the traveler curtain will be a rich, deep green and the principal curtains will be of gold. The patterned carpet which cushions the aisles combines these greens and golds.

Lighting and sound have been improved, also. Four new spot lights were installed on the stage and there are 16 1,000-watt instruments located in the beams. A 120-circuit patch panel is tied into the existing dimmer boards. The system as it now stands gives an impressive flexibility, and allowances have been made for the hook-up of future instruments, if they should ever be thought necessary.

But it was the old sound system which brought the greatest grief to performers and audiences alike. The improvement there is astounding. In the past the sound of small-group and single-performer programs was either swallowed completely by the hall, or was so badly distorted that one wished it had been swallowed. People seated under the balcony strained unsuccessfully to hear delicate performances such as classical guitarists or string chamber orchestras.

Now a central cluster of speakers, suspended from the ceiling in front of the stage, can be raised or lowered to the optimum position for specific performances. Eight new microphone outlets have been installed on the stage—two on either side of the front and two on either side of the rear. This allows the positioning of equipment to gather up the performance sounds as accurately as possible.

With 32 speaker cones installed under the balcony, people seated there can enjoy a "sound-all-around" effect and even the softest tones can be heard without distortion. The laws of physics being what they are, the sound from the stage-area speakers reaches the people in the back of the auditorium and in the upper balcony a fraction of a second later than it reaches those directly in front of the speakers. To compensate for this difference the speakers located under and over the balcony contain a sensitive delay set-up which precisely coordinates the sound from the front speakers with those in the rear of the hall, again eliminating distortion.

PHOTOGRAPH BY HARRY SNAVELY

The movie sound system has been tied in with the central system in the auditorium. To round off the acoustic alterations of Memorial Auditorium, doors have been installed in the exits leading from the balcony to the second-floor corridor and soundproofing material has been put on the stairs in the upper balcony. New seats and air-conditioning, everyone agrees, would be nice, but are simply too expensive.

Memorial Auditorium was built in 1928 and has never been renovated. It has been repainted only once. But though long-awaited, the improvements are certainly welcome and do much for Ohio University's impression on a large segment of the area population. Richard Stevens, director of public occasions, has described Memorial Auditorium as "probably the most-used building in southeastern Ohio." Several University departments hold classes in the building during the day and it is open for some form of public performance five to seven nights a week throughout the year.

Stevens estimates that the Ohio University Artist Series has an average annual attendance in the neighborhood of 20,000. In addition, the MIA films are shown to approximately 30,000 people a year. Symphony performances draw about one thousand people each time and the lectures, occurring several times each quarter, have audiences of 700-800. All told, an incredible number of people will enjoy and benefit from the redoing of Memorial Auditorium. *PLB*

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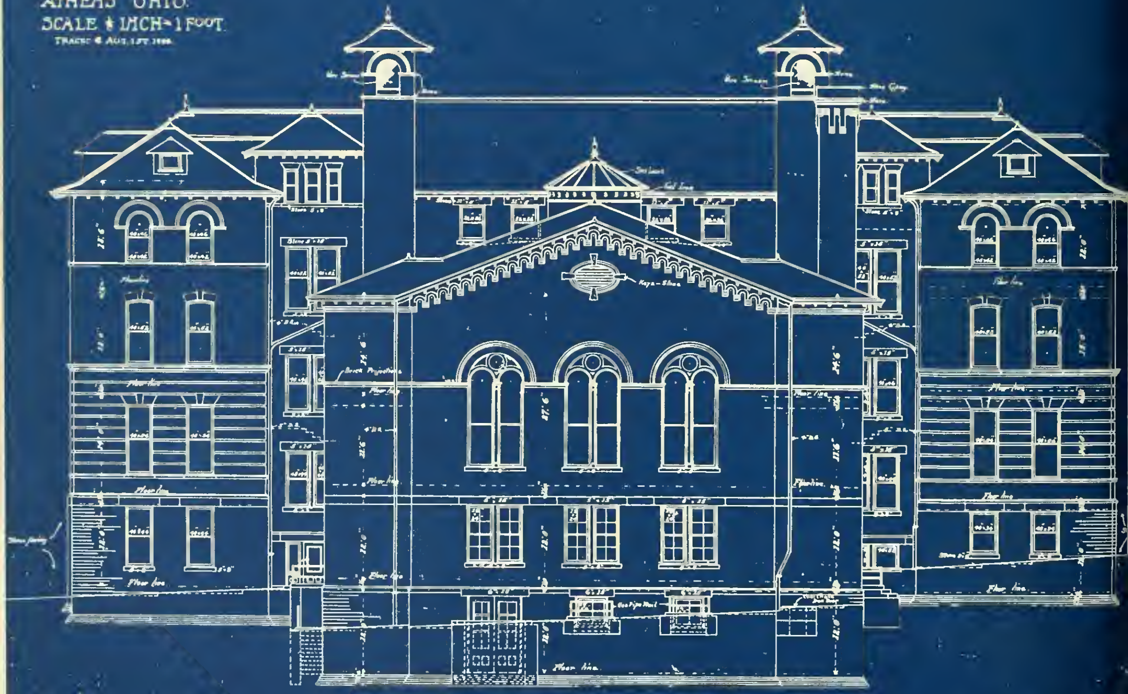

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